

TITLE

**METHOD FOR TRANSMITTING SHORT MESSAGE USING INTERNET
PHONES AND SYSTEM THEREFOR**

CLAIM OF PRIORITY

[0001] This application claims priority to an application entitled *METHOD FOR TRANSMITTING SHORT MESSAGES USING INTERNET PHONES AND A SHORT MESSAGE TRANSMISSION SYSTEM* filed in the Korean Industrial Property Office on September 5, 2001 and assigned the Serial No. 2001-54383, the contents of which are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

Technical Field

[0002] The present invention relates generally to a digital communication system for wireless mobile communication terminals based on the H.323 protocol system and, in particular, to a method and system for transmitting a set of short messages, as well as voice communications, between Internet phones using the H.323 protocol system.

Related Arts

[0003] Telephone networks generally allow wired or wireless subscribers to make voice communications with each other, while data communication networks allow the subscriber to

1 perform various data or information transmissions, as well as voice communications. Further, so-
2 called Internet phones capable of making domestic or international telephone calls via the Internet
3 on data communication networks have been recently in wider use due to their much more
4 economical telephone charges (in particular, in relation to any international calls) compared to
5 charges incurred in using regular telephones.

6 [0004] The H.323 protocol recommended by ITU-T (International Telecommunication Union-
7 Telecommunication Standard Sector) prescribes standards for digital multimedia based
communications between wireless terminals, *e.g.*, Internet phones on the packet based network such
as Internet. This protocol may be referred to as "Voice over Internet Protocol (VoIP)" service in the
art. The H.323 system is configured to prescribe the entire communications protocol between a
variety of network entities substantially constituting one fixed network for multimedia based
communications involving the transfer of images as well as voice information, which entities may
include Internet phones, a gateway, a multipoint control unit (MCU) as a terminal, and/or a
gatekeeper for performing call admission or address translation.

15 [0005] An H.323 multimedia communication network comprises at least one gatekeeper for
16 generally controlling the H.323 system and a plurality of H.323 terminal equipments, such as a
17 personal computer or an Internet phone optionally connected, via a packet based network, to the
18 gatekeeper. The gatekeeper serves substantially to provide overall control of all operations of the
19 H.323 system, including setting up and management of incoming/outgoing calls, and any other
20 additional services, such as multi-party calling, call forwarding or various call termination services

1 available using the system, in particular, in association with the H.323 terminals and a gateway. For
2 the purpose of effecting digital communications between those Internet phones, the H.323 protocol
3 system generally prescribes a series of authentication messages required to communicate between
4 the Internet phone and the gatekeeper.

5 [0006] In order for an Internet phone of a calling party to make a call to an Internet phone of a
6 called party, the Internet phone of the calling party transmits a call admission request message to the
7 gatekeeper, and the Internet phone of the calling party also provides an address of the Internet phone
8 of the called party, *i.e.*, a telephone number of the called party. Thereafter, in reply, the gatekeeper
9 transmits a call admission confirmation message to the calling party when the gatekeeper retrieves
10 a corresponding Internet protocol (IP) address of the called party after searching through a list of IP
11 address registration, and then sends back the retrieved IP address to the calling party. Then, the
12 Internet phone of the calling party transmits a call setup message to the Internet phone of the called
13 party using this IP address of the called party. The Internet phone of the called party receiving the
14 call setup message sends back a call admission request message to the gatekeeper, and the gatekeeper
15 sends back an admission confirm message to the Internet phone of the called party in response.
16 Then, the Internet phone of the called party receiving the admission confirm message transmits a call
17 connect message to the Internet phone of the calling party. Subsequently, media channel signaling
18 is carried out to establish a communication channel between the Internet phones of the calling party
19 and the called party, and then speech between the two Internet phones is performed.

20 [0007] In the meantime, a short message service (SMS) conveniently utilized to transmit a

1 relatively short message from a calling party to a called party using a mobile terminal is commonly
2 employed in a cellular communication system. Most users accustomed to this SMS function would
3 prefer to use such a short message service in their Internet phones, allowing them to enter and
4 transmit any short messages to an intended called party as necessary. However, with regard to the
5 Internet phones, there is no prescribed protocol for communication of such a short message service
6 via its own network connection, although the Internet phones allow not only voice communication
7 but also video telephone calling.

SUMMARY OF THE INVENTION

[0008] It is, therefore, an object of the present invention to provide a method and system for
transmitting a short message service (SMS) message to a called party's Internet phone, using a
registration admission and status (RAS) protocol defined by the H.323 multimedia communication
protocol.

[0009] To achieve the above and other objects, the present invention provides a system for
transmitting a short message in an Internet phone, the system comprising: a gatekeeper for
controlling setting up of a call and user registration or cancellation in the Internet phone; an Internet
phone optionally connected with said gatekeeper, the Internet phone having a short message
transmission module for transmitting the short message via a predetermined port, the short message
including information corresponding to a telephone number of a called party's Internet phone; and
a short message transmission server serving as a terminal registered in the gatekeeper for

1 transmitting, to the gatekeeper, information relating to the called party's Internet phone incorporated
2 in the corresponding short message when the short message is inputted through the predetermined
3 port so as to obtain an Internet protocol (IP) address of the called party's Internet phone, and for
4 transmitting the short message to the IP address of the called party's Internet phone.

5 **[0010]** Preferably, in the system, the short message transmission server transmits an admission
6 request (ARQ) message of the registration admission and status (RAS) protocol to the gatekeeper
7 with the telephone number of the called party's Internet phone included in the short message, and
then receives an admission confirm (ACF) message to obtain therefrom the Internet protocol (IP)
address of the called party's Internet phone.

10 **[0011]** More preferably, the short message may include a tag portion, the telephone number of the
11 calling party's Internet phone, the telephone number of the called party's Internet phone, and
12 information regarding the length of a main sentence of the short message.

13 **[0012]** According to another aspect of the invention, there is provided a method for transmitting
14 a short message in an Internet phone, comprising the steps of: transmitting the short message,
15 including a telephone number of a called party's Internet phone, from a calling party's Internet phone
16 to a short message transmission server; transmitting a call admission request message to the
17 gatekeeper with the telephone number of the called party's Internet phone included in the transmitted
18 short message; receiving a call admission confirm message, including an Internet protocol (IP)
19 address of the called party's Internet phone, from the gatekeeper; and transmitting the corresponding
20 short message from the short message transmission server to the Internet protocol (IP) address of the

1 called party's Internet phone.

2 BRIEF DESCRIPTION OF THE DRAWINGS

3 [0013] A more complete appreciation of the invention, and many of the attendant advantages
4 thereof, will be readily apparent as the same becomes better understood by reference to the following
5 detailed description when considered in conjunction with the accompanying drawings, in which like
6 reference numerals indicate the same or similar components, and wherein:

[0014] FIG. 1 is a schematic block diagram showing a configuration of an H.323 multimedia
communication network;

[0015] FIG. 2 is a flowchart of the registration admission and status (RAS) message protocol for
initiating a telephone call between Internet phones;

[0016] FIG. 3 is a schematic block diagram showing the configuration of an H.323 multimedia
communication network for transmission of the short messages service (SMS) data according to a
preferred embodiment of the present invention;

[0017] FIG. 4 is a flowchart of message confirmation for communication of the SMS data between
the Internet phones according to a preferred embodiment of the present invention; and

[0018] FIG. 5 is a schematic diagram showing a data format of the SMS data for the Internet
phones according to a preferred embodiment of the present invention.

18 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

1 [0019] A preferred embodiment of the present invention will be described herein below with
2 reference to the accompanying drawings. In the following description, well-known functions or
3 constructions are not described in detail since they would obscure the invention in unnecessary
4 detail.

5 [0020] The present invention is configured in such a way that an Internet phone according to the
6 H.323 protocol transmits a short message to a short message transmission server, and then the short
7 message transmission server transmits the short message to a called party's Internet phone. To this
8 end, the present invention provides a method for message transmission between the short message
9 transmission server and the Internet phone and a gatekeeper. The short message transmission server
10 serves as an H.323 terminal registered in the gatekeeper on the H.323 network to obtain an IP
11 address of the called party. Further, it is to be appreciated that the short messages according to the
12 present invention are transferred using a user datagram protocol (UDP) or a transmission control
13 protocol (TCP) of the transmission control protocol/internet protocol (TCP/IP), and an Internet
14 phone and an SMS server employ respective predetermined ports.

15 [0021] FIG. 1 shows a schematic diagram for the structure of an H.323 multimedia
16 communication network, comprising at least one gatekeeper 110 for generally controlling the H.323
17 system, and a plurality of H.323 terminal equipments 122 to 124, such as a personal computer or an
18 Internet phone optionally connected, via a packet based network, to the gatekeeper 110. The
19 gatekeeper 110 serves substantially to provide overall control of the operations of the H.323 system,
20 including setting up and management of an incoming/outgoing call, and any other additional

services, such as multi-party calling, call forwarding or various call termination services available using the system, in particular, in association with the H.323 terminals 122 to 124 and a gateway (not shown). For the purpose of effecting digital communications between those Internet phones, the H.323 protocol system generally prescribes a series of authentication messages required to communicate between the Internet phone and the gatekeeper, as set forth in FIG. 2.

[0022] FIG. 2 is a flowchart of the registration admission and status (RAS) message protocol for initiating a call between the Internet phones. According to the flowchart of FIG. 2 in order for an Internet phone A (calling party) to make a call to an Internet phone B (called party), the Internet phone A transmits a call admission request message to the gatekeeper in step 201, and the Internet phone A also provides an address of the Internet phone B, i.e., a telephone number of the called party. Thereafter, in reply in step 203, the gatekeeper transmits a call admission confirmation message to the Internet phone A after the gatekeeper retrieves a corresponding Internet protocol (IP) address of the called party by searching a list of IP address registrations, and sends back the retrieved IP address to the calling party. Then, the Internet phone A transmits a call setup message to the Internet phone B using this IP address of the called party in step 205. The Internet phone B receiving the call setup message sends back a call admission request message to the gatekeeper in step 207, while the gatekeeper sends back an admission confirm message to the Internet phone B in response in step 209. Then, the Internet phone B receiving the admission confirm message transmits a call connect message to the Internet phone A in step 211. Subsequently, in step 213, media channel signaling is carried out to establish a communication channel between the Internet phones A and B

1 and then, in step 215, speech between the two Internet phones is performed.

2 **[0023]** FIG. 3 schematically shows the configuration of an H.323 multimedia communication
3 network for transmission of the short messages service (SMS) data according to a preferred
4 embodiment of the present invention. Referring to FIG. 3, the H.323 multimedia network system
5 according to the invention includes: a gatekeeper 310 for generally controlling the H.323 system;
6 two or more terminals 322 to 324 optionally connectable to the gatekeeper 310, the terminals 322
7 to 324 including, for example, personal computers or Internet phones having therein an SMS
transmission module for transmitting the SMS message to an SMS transmission server 330; and the
SMS transmission server 330 adapted to obtain an IP address of a called party's Internet phone, and
serving as an H.323 terminal registered in the gatekeeper 310 according to the feature of the present
invention. Preferably, the H.323 system may be further provided with at least one gateway 340
connectable to a packet based network (PBN) and serving as an interface for linkage between the
TCP/IP protocol and a telephone network.

8 **[0024]** The gatekeeper 310 serves to generally control the entire operation of the H.323 system
9 according to the present invention, and carries out setup and management of an incoming/outgoing
10 call, and any other additional services such as multi-party calling, call forwarding or various
11 incoming call termination services available using the system, in particular, in association with a
12 multipoint controller (MC) 312, the H.323 terminals 322 to 324, the SMS transmission server 330,
13 and a gateway 340. The gateway 340 serves as an interface for association between the TCP/IP
14 protocol and the telephone network, and the respective H.323 terminals 322 to 324 correspond to
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terminals for providing VoIP service on the basis of the TCP/IP protocol. The multipoint controller (MC) 312 that serves to control multi-party calling may be provided individually or integrally with other components in a single module. A multi-party control unit (MCU) 316, indicated by a dotted line in FIG. 3, serves to control the multi-party calling and to provide a mixing function. Although the MCU 316 enables users to have improved multi-party calling, it is hardly applied in the actual systems owing to its expensive price.

[0025] The H.323 compatible gatekeeper 310 carries out the various functions of registration, cancellation, modification and searching of a user, utilizing a register, admission and status (RAS) message that corresponds to a lower element of an H.225 protocol system performing the setup of a call, and the registration and cancellation of users. In other words, the gatekeeper 310 searches a user information database 314 when any message relating to the registration is inputted, and then notifies the user as to whether the requested message will be processed further with the system. Upon setup of a call, the gatekeeper searches the database 314 to determine whether the two users of the corresponding call have been ever registered therein, and allows setting up of the call for only registered users.

[0026] Hereinafter, the operation for transmission of SMS messages according to the embodiment of the present invention will be described in further detail with reference to the above-mentioned configuration of a network system. First of all, if the user enters a short message set together with a phone number of a desired called party into his own originating terminal (*i.e.*, his Internet phone), and then depresses a specified button for transmission of the short message (that is, SMS message),

1 and then the SMS transmission module of the corresponding terminal transmits this SMS message
2 to a predetermined port of the SMS transmission server.

3 [0027] Referring to FIG. 5, the format of the SMS message generally consists of a header area and
4 a user data area, wherein the header area includes an address (*i.e.*, phone number) of the calling
5 party's Internet phone, an address (*i.e.*, phone number) of the called party's Internet phone, and a
6 length of the message, while the user data area includes information relative to the inputted SMS
7 message. In the meantime, the SMS transmission server 330 continues to monitor the predetermined
8 port and, upon input of a new SMS message, obtains a tag of the corresponding SMS message, and
9 obtains from the header other information, such as the address of the calling party's Internet phone,
10 an address of the called party's Internet phone, and the length of the SMS message. Thus, it
11 transmits an admission request (ARQ) message for registration admission and status (RAS) to the
12 gatekeeper 310 with the telephone number of the called party and then, in return, receives an
13 admission confirm (ACF) message to thereby obtain an IP address of the called party's Internet
14 phone. Thereafter, a corresponding SMS message is transferred to the predetermined port of the
15 obtained IP address.

16 [0028] Referring now to FIG. 4, which is a flow chart of the message confirmation procedure for
17 communication of the SMS data between the Internet phones according to a preferred embodiment
18 of the present invention, a more detailed description will be made relative to the SMS message
19 transmission. In step 401, the Internet phone A of the calling party transmits a short message set to
20 the SMS transmission server 330, wherein the corresponding short message includes the address

(phone number) of the called party, *i.e.*, Internet phone B. Then, the SMS transmission server 330 transmits, in step 403, a call admission request message to the gatekeeper 310 with the phone number of the Internet phone B received from the Internet phone A, wherein the SMS transmission server 330 functions as the H.323 terminal registered in the gatekeeper 310. In reply thereto, the gatekeeper 310 transmits a call admission confirm message to the SMS transmission server 330 in step 405 after the gatekeeper 310 searches the list of registered Internet phones for the IP address of the called party, *i.e.*, Internet phone B, and then transmits the obtained address to the SMS transmission server 330. In step 407, the SMS transmission server 330 transmits the corresponding short message to the Internet phone B with the IP address. As a result, the method and system for SMS message transmission are realized using Internet phones according to the present invention.

[0029] As described in the foregoing, it is appreciated that the invention achieves the SMS communication function between the Internet phones by merely adding an SMS transmission server to the H.323 network system. Accordingly, the inventive method and system solve the problem of the prior art wherein the Internet phones are not provided with any protocol for communication of such a short message service via their own network connection, although they allow not only voice communication but also video telephone calling. The invention allows a user of an Internet phone to transmit the SMS message to the called party's Internet phone using the registration admission and status (RAS) protocol of the H.323 multimedia communication protocol.

[0030] Although a preferred embodiment of the present invention has been described, it will be understood by those skilled in the art that the present invention should not be limited to the described

- 1 preferred embodiment. Rather, various changes and modifications can be made within the spirit and
- 2 scope of the present invention, as defined by the following claims.

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